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REMARKS
ON
NITRATE OF POTASH
IN
ACUTE PNEUMONIA.

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THE treatment of acute pneumonia being so often and so hotly made the subject of dispute, I venture to bring the notes (abbreviated) of some few cases under the notice of the profession, selected out of a large number which from time to time it has fallen to my lot to treat. It is unnecessary to make any remarks here on the various views adopted by so many eminent authorities on the treatment of this affection. These are fully expounded in the text-books of modern days, and all are familiar with the different plans of treatment and the particular remedies, such as tartar emetic, digitalis, quinine, veratria, aconite, alkalies, chloroform, which have each had their special advocates, as also the various methods employed for combating the inflammatory process locally, as depletion, counter-irritation, cold, cataplasms, &c. The therapeutic value of digitalis and quinine has been so frequently demonstrated to my satisfaction, that I look on both, when given in sufficient quantities, as the two most powerful antipyretics we possess; the latter I have frequently given in doses of ten and fifteen grains every third hour, and that, at times, without producing any unpleasant symptoms. The effect on the temperature is, in my experience (if the drug be borne), certain and quick.

I have several thermometric charts of febrile affections, intermittent in character and otherwise, with and without chest complications, which show at a glance this property of quinine, and I may merely add in passing, that my experience of its administration does not contra-indicate its trial and use in the large doses in which it has been recommended by some authorities. I might reiterate these remarks when I allude to digitalis. I have at the present moment a case of typhoid fever in hospital, in which the effects of digitalis in persistently lowering the temperature were well shown, and I have in several cases exhibited this drug in typhoid fever with a similar result. In cases of this disease complicated with pneumonia I look upon digitalis as particularly useful, especially in the later stages of the affection. Tartar emetic has the foremost place as an antipyretic in the treatment of pneumonia, and certainly its administration in this disease dates further back, and has had more startling statistical proofs adduced in its favour, than any drug of this nature. I have seen it administered with apparently a marvellous effect; but so also, I have been obliged, from its lowering and debilitating results (and in some cases from an idiosyncrasy on the part of the patient, contra-indicating its use, even in small doses), to stop its administration. Of late I have relinquished altogether the use of tartar emetic, and have treated nearly every case of acute pneumonia which I have seen *in the earlier stages* of the disease with nitrate of potash, in ten and fifteen grain doses, repeated every third hour, until it produced its peculiar effect on the temperature and pulse. I combine at times with it gr. i. of hippo and gr. i. of antimonial powder.

I have had cases in which I have given up the nitrate of potash, and resorted to quinine or digitalis, from complications which prevented its continuance, and some in which, the pneumonia being a secondary affection, it was of course excluded. Regarding the accompaniments of this treatment, diet and local measures to the lung, I must state, that I lean entirely to a free and generous support, and rather to the side of the stimulant system than the contrary. In fact, I must confess that I have no experience either of general depletion or of a debilitating regimen, and the results of such modes of procedure I can hardly speak impartially of, as I have ever been more a follower of Todd and Bennett in the management of pneumonia than of the upholders of the lowering and depressing system. Not but that I feel certain I have seen equally injurious results follow from the blind and indiscriminate employ-

ment of stimulants as from the routine adoption of the calomel, tartar emetic, and depleting measures. I know many object to the employment of counter-irritants and vesicants in pneumonia. I can only say that my practical experience enforces on me the great value of these measures, and, as will be seen in the history of the following cases, this course was adopted in all with the best results. I find nothing so soothing as the linseed warm cataplasms kept constantly over the inflamed lung, more especially after vesication. These are my sole applications (*linseed poultices*) in the very early stage of the disease, but I believe nothing hastens resolution like a free vesicant, the surface then dressed, and all being covered with a linseed poultice, kept constantly warm. I give the notes of the subjoined cases briefly, as taken from the hospital books and my own temperature charts. One case is particularly interesting, as in it the temperature reached an extraordinary height on the seventh day. The temperature in these cases was taken nearly at all times in the axilla; at other times in the mouth. It frequently was taken with two thermometers at the same time, to correct any errors resulting from the instrument, the time taken in any given experiment varied; the average time being about seven minutes to ten. I regret that I often was unable to take the temperature more than once in the twenty-four hours; but the observations in these cases were made in the height of the small-pox epidemic in our hospital, when every spare moment was occupied in attending to those patients. I exhibited the charts containing the tracing of the temperature and the daily condition of the patient, the pulse, and respirations at the Cork Medical Society during the past session. It is unnecessary for me to go into any details of treatment, further than to state that the nitrate was administered in *all*, as I have stated above, and the general principles I have put forward carried out.

I have been struck by the fact that the effects on the temperature and pulse do not comparatively coincide in many cases. The temperature falls at first, without a corresponding decrease in the frequency of the pulse in proportion to the fall of the temperature, which is sudden and rapid, so much so as to astonish one on making an examination; but once the pulse begins to fall it does so slowly and certainly, and the medicine, if pushed, will be followed by its characteristic effects, a slow and intermittent pulse. Now, in the majority of cases I find that the respirations decrease in rapidity, exactly in proportion to the pulse, but in pneumonia their

number is so great that their decrease appears less, and the action of the medicine not so immediate as on the pulse and temperature. I need hardly say that when these full doses of the medicine are administered its effects should be carefully watched and its administration suspended, when such effects are manifested through the heart and circulation.

CASE I.—Daniel Sullivan, aged twenty-one ; admitted to the Cork Fever Hospital on the 22nd February, 1872. First seen by me on the fourth day of the disease. Icteric tint in conjunctivæ, rusty expectoration, dyspnoea, dulness, and absence of respiratory murmur over lower lobe of right lung ; pulse 112, respirations 36, temperature $104^{\circ}4$; costive bowels ; ordered diaphoretic and aperient ; mustard and warm linseed cataplasms over lung.

24th—Pulse 108, respirations 50, temperature $104^{\circ}5$; to get 15 grains of nitrate of potash every third hour. Not given regularly at night as the patient had some sleep.

25th (sixth day of disease)—Pulse 88, respirations 42, temperature $105^{\circ}2$; continue nitrate, to be given regularly day and night.

26th (seventh day of disease)—Pulse 56, respirations 28, temperature 100° .

Eighth day—Pulse 56, respirations 28, temperature 99° ; nitrate now given but twice daily.

Ninth day—Pulse 44, respiration 24, temperature $98^{\circ}4$; omitted nitrate ; chlorate of potash and bark given ; slight intermittence in pulse ; heart's action slow and labouring.

Tenth day—Pulse 56, respirations 20, temperature $98^{\circ}2$. From this out patient became perfectly convalescent, and recovered rapidly without any unpleasant symptom. Nutriment—milk, beef-tea, chicken broth, and claret ; vesicant over lung on fifth day, and linseed cataplasms continued subsequently.

CASE II.—James Barry, aged eighteen ; admitted to the Cork Fever Hospital, on the 14th of March, 1872 : fifth day of disease. Pulse 92, respirations, 30 ; slight cough, with rusty expectoration ; great distress of countenance ; dulness and absence of respiration over lower lobe of right lung.

On the sixth day, pulse 112, respirations 36, temperature 106° in the morning, $105^{\circ}1$ in the evening. Taking nitrate during the day, omitted at night by mistake of nurse.

On the seventh day, pulse 112, respirations 36, and on examina-

tion with the thermometer (which was a quarter of an hour in the axilla), I was surprised to find the temperature had gone up during the night to $108^{\circ}\cdot 1$. This fell to 106° before night, the pulse and respirations remaining as in the morning. Chest had been vesicated, and linseed cataplasms kept constantly on. Taking *mistura vini gallici* and claret alternately with beef-tea, chicken broth, and milk; fifteen grains of nitrate every third hour continued.

On the eighth day, pulse 96, respirations 30, temperature $104^{\circ}\cdot 5$; nitrate continued during day time.

Ninth day—Pulse 64, respirations 30, temperature $100^{\circ}\cdot 4$.

Tenth day—Pulse 62, respirations 30, temperature $97^{\circ}\cdot 4$; nitrate omitted.

The case, from this out, continued to do well, and was sent into the convalescent ward on the sixteenth day of the disease, with pulse 65, respirations 18, temperature $98^{\circ}\cdot 2$; and was shortly afterwards discharged cured.

CASE III.—John Murphy, aged thirty; admitted to the Cork Fever Hospital on the night of the 28th of January, 1873; complaining some days with feverish symptoms; dulness over lower half of right lung, with slight friction sound; also extensive bronchial breathing over both lungs; great distress of countenance; pulse slightly intermittent; sputa viscid and frothy, with slight tinge of rust colour.

On 29th—Pulse 100, respirations 36, temperature 105° ; fifteen grains of nitrate of potash every third hour, with gr. i. of hippo.

30th—Pulse 100, respirations 28, temperature 103° .

31st—Pulse 84, respirations 28, temperature $100^{\circ}\cdot 1$; continued nitrate given every six hours.

February 1st—Pulse 88, respirations 30, temperature $101^{\circ}\cdot 4$; repeat nitrate.

2nd—Pulse 60, respirations 20, temperature $98^{\circ}\cdot 1$; omit nitrate.

3rd—Pulse 56, respirations 18, temperature $97^{\circ}\cdot 4$; diet and local treatment same as in last case.

In a few days he was up in the ward, and finally discharged from the hospital cured.

CASE IV.—Michael Donovan, aged twenty-four; discharged from the Cork Fever Hospital on 17th May, 1872, after typhoid fever, accompanied with pneumonia, in which there had been, up to the twenty-first day of the disease, a persistent high range of temperature, varying from $101^{\circ}\cdot 2$ to 104° . On the twenty-first day treated with fifteen grain doses of quinine, and on the twenty-second ten

grain doses, every fourth hour, under which treatment his temperature fell from $103^{\circ}3$ to $98^{\circ}1$. This was on the 7th of May, and he left hospital on the 17th.

Re-admitted as a fever case on the 9th of June. Pulse 120, respirations 42, temperature 104° ; bronchial râles over both lungs; bronchial sputa; ordered fifteen grains of quinine every fourth hour, to be omitted during night time, and twenty grains of nitrate of potash given at ten o'clock; mustard poultices to chest between the scapulæ.

10th—Pulse 120, respirations 36, temperature $102^{\circ}2$. Two ten grain doses of quinine and nitrate at night.

11th—Pulse 96, respirations 36, temperature 104° . Quinine to be given every fourth hour, and nitrate at night.

12th—Pulse 96, respirations 36, temperature $102^{\circ}4$. Two ten grain doses of quinine daily, and nitrate at night.

Same treatment continued until 17th of June, when the pulse had fallen to 84, the respiration to 20, temperature $98^{\circ}5$.

These cases show the effects of the nitrate of potash in reducing the fever in acute inflammatory attacks of the lungs. I do not propose to discuss the method in which it cures the inflammation and arrests its progress, whether it be by promoting the absorption of its products through its action on the fibrin, or by a direct action on the blood through an effect on its corpuscles, or only a secondary influence by reducing the force of the fever, and lowering the force and frequency of the heart's pulsations. I am inclined, myself, to believe that it acts in both ways, and that the beneficial results which I have frequently witnessed coming on so speedily after its administration can hardly be altogether due to an indirect effect on the heart's action and on the general pyrexia. Nitrate of potash, in similar doses, has proved to me an invaluable agent in acute rheumatism, either by itself or combined with bicarbonate; and here, I think, we must look for an explanation other than above stated, and attribute its power to its direct action on the inflammatory blood.

